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10/560,244

12/12/2005

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EXAMINER

TAMAI, KARL I

ART UNIT

PAPER NUMBER

2834

NOTIFICATION DATE

DELIVERY MODE

01/04/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/560,244 | Applicant(s) KASHIHARA ET AL. | |
| | Examiner KARL I.E. TAMAI | Art Unit 2834 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-8,10 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10 and 13-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. The objection to the specification is withdrawn.

Drawings

2. The objection to the drawings is withdrawn.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

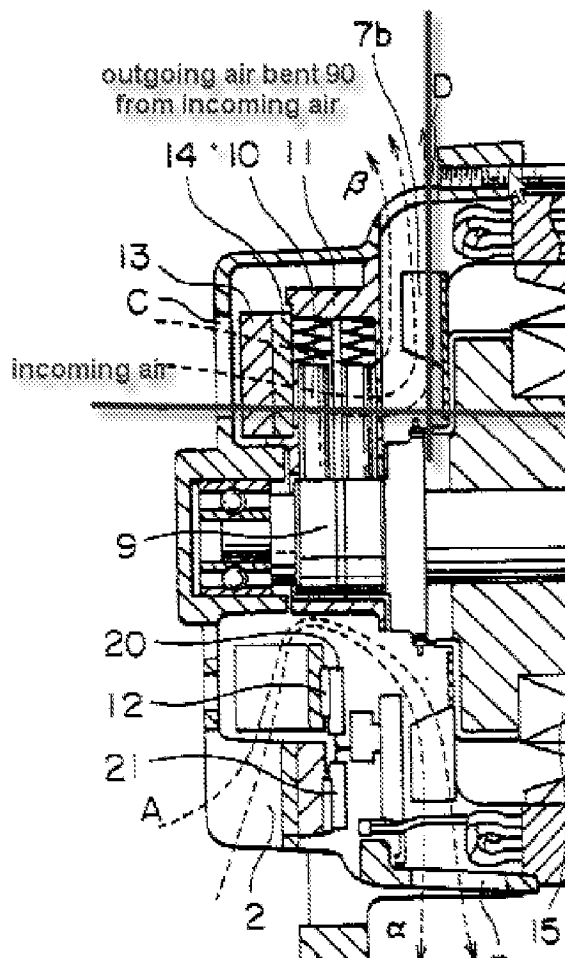
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932). Fujita teaches a generator for a vehicle having a rotor 6 with a field windings 15, a stator including a stator core 17 arranged opposed to the rotor and an electrical conductor wound 18 on the stator core, and a housing 3 supporting the rotor and the stator. Fujita teaches the stator core 17 is constituted by core having a plurality of slots (see figure 3) each extending to an axial direction, the electrical conductor is comprised of a rectangular slot-in portion 18a located in the slots and a circular cross-over portion 18b connecting each of the slot-in portions at the shaft end side of the stator, wherein the conductor 18 is formed so that of-the slot-in portion 18a located in the slots is molded to substantially rectangular (in the press dies 102a, 102b of figure 14) in its cross-sectional profile before it is entered in the slots and the conductor of the cross-over portion 18b is substantially circular in its cross-sectional profile. Fujita teaches longer side portion of the conductor (radial side) of the slot-in portion located in the slots has an insulation coating of which thickness is smaller than that of insulation coating in the cross-over portion due to the insulating resin coating of embodiment 9 (figure 12). Fujita teaches the longer side being in the radial direction and shorter side in the circumferential direction in order to increase output by reducing the chances of magnet saturation. Fujita teaches the core 17 directly connected to the housing 3 being endbrackets 1, 2 (see figure 1) protecting the conductors. Fujita teaches the blades bending the incoming air at a right angle (see figure 1, as annotated and shown below). Fujita teaches every aspect of the invention except it does not teach the core being

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laminated or the conductor being a previously coated wire with the in-slot portion being substantially rectangular with the longer side having an insulation thickness smaller than the circular cross over portion and positioned in the slot with the long side in the radial direction without any air space. Oohashi teaches the core 11 being laminated for easy insertion of the winding 60 (paragraphs 0035-0036) with a rectangular cross section at the in slot portions 16 and circular cross over portions 17. Oohashi (embodiment 7) teaches the rectangular portions are molded by pressing in a jig to provide good space factor (paragraph 0008), the previously coated insulation 14 is compressed to be thinner than the round end sections (shown in figures 23A and 23B). Oohashi teaches the flat surfaces on the sides of being in close contact with the side walls of the slot to dissipate heat through the core (paragraph 0165). It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the alternator of Fujita with the stator core being laminated to provide easy assembly with a superior rate of production, as taught by Oohashi, and with the conductor being a previously coated wire with the in-slot portion being substantially rectangular with the longer side having an insulation thickness smaller than the circular cross over portion to provide good space factor, as taught by Oohashi, and with flat sides being in contact without any air space to effectively dissipate heat through the stator core as taught by Ooashi.



Fujita figure 1.

Claim 4: Fujita et al. discloses a stator and conductor as in claim 1 above and further discloses that the slot-in portion is disposed on a line in the radial direction (Fig. 3).

Claim 7: Fujita et al. discloses a stator and conductor as in claim 1 above and further discloses that the crossover portion is shielded by a case comprising of aluminum frames (Fig. 1 and [0103]). This is equivalent to the metallic housing as claimed in the instant application.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Asao et al. (Asao)(US 6281612). Fujita and Oohashi teach every aspect of the invention except the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction. Asao teaches the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction to provide a slot factor in the slot (Fig. 11). Asao teaches the slot in portion impregnated with resin to provide an integral structure with the core (col. 7, line 4). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction to provide a slot factor in the slot, as taught by Asao.

7. Claim 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Oohashi et al.(Oohashi '958)(20020096958). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the conductor of the in-slot portion impregnated with resin. Oohashi ('958) teaches the resin is applied to both the cross over portions and in side the slots (paragraphs 0023-0024) to reduce noise and vibration in the stator (paragraph 0003). Oohashi teaches resin in the slots and the cross over section. It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita

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and Oohashi with the conductor of the in-slot portion impregnated with resin to reduce vibration and noise in the stator, as taught by Oohashi ('958)

8. Claims 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Ohashi et al.(Ohashi '205)(US 6018205). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the periphery of the housing having ribs and air discharge holes or the charging air holes for longitudinal incoming air. Ohashi ('205) teaches ribs 28 and exhaust holes 29 with longitudinal charging air holes (see figure 2), and with the air bent at right angles (see fig. 2) to provide cooling and improved power generation (col. 2, lines 60-65). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the periphery of the housing having ribs, air discharge holes, and charging air holes for longitudinal incoming air to provide cooling and enhanced power generation, as taught by Oohashi ('205).

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the cross over portion having a diameter of 1.6mm and the in-slot portion has a thickness of 1.3 mm. Fujita teaches the diameter of the cross over section and the thickness of the rectangular section are result effective variables in determining the circular and

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rectangular cross sections providing inexpensive conductors (paragraph 0150). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the cross over portion having a diameter of 1.6mm and the in-slot portion has a thickness of 1.3 mm to optimized the expense of the generator with the current carry capacity of the generator, as suggested by Fujita, and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. (see *In re Bosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Yumiyama et al. (Yumiyama)(US 5587619). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the thickness of the insulating coating on the cross over portion is 50 um and the thickness of the slot in portion is 40 um. Yumiyama teaches the thickness of the insulation is result effective to provide a high space factor in the slot with decreased magnetic resistance in the magnetic core (col. 2, line 49-62). Yumiyama teaches the thickness of the insulating coating in the um range (48 um on the rounded surface and 30 on the flat surfaces). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi the thickness of the insulating coating on the cross over portion is 50 um and the thickness of the slot in portion is 40 um, because Yumiyama teaches the thickness of the insulating coating on the coated is flatten to provide a high

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space factor with the magnetic resistance in the core decreased for a small motor with high output; and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. (see *In re Bosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932), in further in view of Oohashi et al.(Oohashi '585)(US 6417585). Fujita and Oohashi teach every aspect of the invention, as discussed above, except the incoming air bent centrifugally. Oohashi ('585) teaches the incoming air bent centrifugally by ribs 35 to optimize power output and minimize wind noise (col. 4, lines 15-20). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the incoming air bent centrifugally to optimize power output and minimize wind noise, as taught by Oohashi ('585).

Response to Arguments

12. Applicant's arguments filed 09/22/2009 have been fully considered but they are moot in view of the new ground of rejection, as set forth above.

Conclusion

13. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karl I.E. Tamai whose telephone number is (571) 272 - 2036. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mrs. Quyen Leung, can be reached at (571) 272 - 8188. The facsimile number for the Group is (571) 273 - 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karl I Tamai/
PRIMARY PATENT EXAMINER

December 28, 2009